

ABSTRACT OF THE DISCLOSURE

A method and apparatuses for measuring the temperature of a radiating body utilizing the alexandrite effect. The method includes the steps of generating a mathematical relationship between a hue value and temperature for an alexandrite effect filter, receiving radiation from the radiating body, measuring a spectral power distribution of the radiation, calculating the hue value based on the spectral power distribution, and determining the temperature using the mathematical relationship. To implement the method, the apparatuses include an optical probe, a spectral or colorimetric measurement device, and a computer. The apparatuses can measure the temperature of any radiating body with or without spectral lines in the spectral power distribution, and are particularly advantageous to measure high to ultrahigh temperature for radiating bodies with spectral lines, such as plasma, electric arc, and high temperature flames.